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THE UNIVERSITY OF ALBERTA

RELIABILITY AND VALIDITY OF THE CANADIAN OCCUPATIONAL INTEREST INVENTORY

by

© DONALD DALE CHOMYC

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

IN PARTIAL FUFILMENT OF THE REQUIREMENTS FOR THE DEGREE

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled Reliability and Validity of the COII submitted by Donald Dale Chomyc in partial fulfilment of the requirements for the degree of Master of Education in Counseling Psychology.

Supervisor

Date 27 March 1981

DEDICATION

To my wife Sylvia, son Lance and daughter Laurel, whose understanding, support and encouragement made this study possible.

ABSTRACT

The present study was carried out to provide information on the reliability of the scores of the Canadian Occupational Interest Inventory (COII) with high school students. A total of two hundred and forty high school students were administered the COII twice, the second administration occurring ninety days after the first administration. The results were analyzed using Pearson product moment correlations to determine the relationships between the test and retest scores. In addition, one hundred and thirty eight students were administered the Ohio Vocational Interest Survey (OVIS) and the results were analyzed using the Pearson product moment correlations to determine the relationship between the corresponding scales of both inventories. Finally, alpha correlations were used to determine the internal reliability of the COII, based on the scores of three hundred and fourteen students.

Significant correlations ($p < .01$) were found between scores on both the original and retest, on all the scales of the COII. On four scales, the average results approached the theoretical mean of 7.0; the exception was the Business Contact-Scientific scale. Based on the results of the alpha correlations, the internal consistency indexes calculated for each scale show a relatively high level of reliability for the COII. This would also indicate that the respective scales do in effect measure the

interests they purport to measure.

Significant correlation ($p < .01$) between the COII and the OVIS show that both instruments are highly related.

The results supported the conclusion that COII is a reliable instrument for use with high school students. The results also support the conclusion that COII scores and OVIS scores do not differ significantly for high school students. In sum, the results of the study lend support to the validity and reliability of using the COII with high school students.

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To my Mother and Father who instilled in me at an early age a love for learning, I give my sincere thanks.

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CHAPTER I

INTRODUCTION

Introduction to the Problem

One of the broad areas of education is to prepare individuals to enter the world of work. However, in the past decade, the labor scene has undergone tremendous change. Jobs are consistently being phased out and new jobs are being created. Kroll (1968) stated that 25 per cent of today's labor force is engaged in occupations that did not exist twenty five years ago. He also predicts that, in the near future, 76 per cent of the working population will be employed in occupations that do not now exist. The nature of technological society is changing the face of work, and people are having a difficult time adjusting.

The temper of the times indicates that there is a vital need for an efficient guidance program to aid all students in gaining insight and an understanding of careers in the complex world of work. Never before in the history of Canada and the economy of the nation, has the need for the development of human resources been so important (France, Mitchell, 1980). One of the most serious issues facing Canadians today is the prospect of unemployment (Frericks, 1979). Love (1980) estimates that during the next five years, industrial growth and attrition are expected to open up more than three million jobs across Canada.

Nevertheless, unemployment is expected to hover between six and eight per cent because the labor force is likely to grow at the same pace as job opportunities. Government, educational institutions, and social agencies are beginning to realize that much of the responsibility in the area of unemployment lies with our institutions. In other words, schools should be more accountable for the employability of their students (France, Mitchell, 1980). Career guidance is one way of instituting accountability.

Students leaving high school today enter a world for which they are often unprepared, which they find difficult to cope with in its demands and expectations. Even if they delay this confrontation with the world of work by entering some post-secondary institution for further training, they must still eventually meet the challenge of seeking a career and a job. In an age in which unemployment is high, even for university graduates, entering the working world becomes increasingly difficult.

The problem of unemployment among youth in Canada can be illustrated by a Report to the Secretary of State (1971) from the Committee on Youth. The report stated that "in only 3 of the past 18 years has the unemployment rate of males 14 to 19 been below 10%. Similarly, for males 20 to 24, their unemployment rates have been below 7% in only 3 of the years since 1958." (p.17)

Female youth has fared somewhat better: although females ages 14 to 19 have had unemployment rates at least twice as high as the unemployment rate recorded for all females, females between the ages 20 to 24 are under the national average. In April, 1971, "Forty per cent of the unemployed males were between the ages of 14 and 24 and 51% of unemployed females were between the ages of 14 and 24." (p.16)

Despite government programs to provide work for youth, unemployment continues to increase. Some of the reasons for youth unemployment, states the Committee (1971), are:

> The young have not as yet developed the formal and informal contacts for job-seeking which emerge only with experience.
>
> ... persistently high rates of unemployment are based on their relative inefficiency in the job search activity ...
>
> Most young people between the 14 and 19 years of age ... lack the education and skills required for an increasingly competitive and technological society, or, more recently are judged by employers to lack the paper certification this new era demands. (pp. 26,27)

Although many other factors such as the economy and the political structure effect employment levels among youth, the aforementioned factors suggest that most youth are unprepared for entry into the labor market. In some cases, this may be a result of unrealistic self-assessment; in other cases, it could be due to a lack of educational and experiential preparedness.

Baer and Rocher (1958) state that wise decisions made as a result of an adequate survey of the youth's own needs and aspirations in relation to reality and to employers' expectations can contribute to success in gaining a job, holding it, and gaining satisfaction from it. Thus, the prospective employee can gain greater satisfaction if he knows what is expected from him and that he can meet these requirements, at the same time fulfilling his own needs. Stevens (1972) states that those individuals with crystallized, realistic goals and with an independent, self-confident behavior succeeded in obtaining desired jobs. Those individuals with vague goals and passive behavior failed to get desired jobs even in a good labor market. This, of course, involves factors related to vocational indecision. The vague goals Stevens mentions result from an individual's inability to accurately and realistically assess his/her own potential in light of the opportunities available. Thus, any individual seeking success in finding a job would be well advised to take part in a self assessment, career exploration program.

Many high schools have programs which propose to help their students plan their future. Usually, in these career programs, the students are administered an interest inventory. Then, based on the students' scores on the inventory, the students explore several of the occupations in which they have shown an interest.

This self assessment and the career exploration follow-up is designed to aid the student choose a realistic job which he will find satisfying.

In Edmonton schools, the major source of information regarding job descriptions is the Canadian Classification of Occupations (CCDO). Using the American Dictionary of Occupational Titles (DOT) as a model, the Canadian Department of Manpower and Immigration (CMI) in 1971 developed the CCDO for the classification and description of Canadian occupations. Like its model, the CCDO describes interests according to the five bipolar factors discovered by William C. Cottle (1950).

In the absence of a scale directly related to these factors and of any measure of interests that could be used by job-seekers, the CMI developed a questionnaire to measure occupational interests, the Canadian Occupational Interest Inventory (COII). By using the COII and its key, the Glossary of Interest Profiles, it is possible to identify occupations related to the job seeker's interests. The COII therefore, appears to be an ideal instrument for use in career programs in schools.

Currently in Edmonton Public High Schools, most interest testing at the grade 11 level involves using the Ohio Vocational Interest Survey. This test, developed by D'Costa and Winefordner in 1969 involves 24 scales. Although these scales are a result

of a cubistic framework based on the DOT, the occupations each scale refers to have been converted to CCDO numbers.

Statement of the Problem

The primary concern of this study is to investigate the accuracy or dependability, or, as it is usually called, the reliability of the COII when it is used with high school students. The study is designed to determine whether there is a high correlation among any of the scales on the test; and whether the means of any of the sub-tests differed between administrations. Finally, this study will attempt to determine if there is any relationship between the COII sub-tests and the OVIS sub-tests.

The answers to the problems posed above should, hopefully, provide a definite statement as to whether or not the COII could be reasonably substituted for the OVIS, and whether or not the COII is a reliable instrument of measurement for high school students.

Purpose of the Study

In summary, the purpose of this study is an attempt to answer the following questions:

1. Is there a significant difference between the scores obtained by grade 11 students on the COII administered ninety days apart?

2. Are there any significant differences between the different sub-tests of the COII in terms of answers given by grade 11 students?

3. Is there a significant difference between the means of the sub-tests of the COII in terms of grade 11 students?

4. Is there a significant difference between the sub-tests of the OVIS and the COII?

Description of the Instruments

The two instruments involved in this study are the COII and the OVIS. Both instruments are group administered interest tests. Because the scores obtained from the OVIS can be readily converted to occupations in the CCDO, the OVIS is enjoying widespread usage by teachers and counselors who are dealing with career education in high schools. The COII, because it is new, is being used primarily in Canada Manpower Centres. However, because scores from the COII relate directly to occupations in the CCDO, the potential for its use in schools is enormous.

The COII consists of five bipolar factors: Things-People, Business Contact-Scientific, Routine-Abstract/Creative, Social-Solitary, Prestige-Production. These various subtests are listed in Appendix D, as well as a brief description by the author of what they purport to focus upon. The OVIS consists of 24 interest scales. These scales were the result of a clustering framework applied to the 114 worker - trait groups identified by the DOT

(D'Costa and Winefordner, 1969). These interest scales and a description of their focus, as designated by the authors, are listed in Appendix E.

Limitations of the Study

The sample used in this study is composed of students 15 years of age to 17 years of age. These students all attend the same high school in Edmonton and are all enrolled in grade 11 Social Studies and English. No attempt was made to differentiate between students of superior academic ability or of lower academic ability. Generalizations from this study to other grades should be made with prudence.

The theoretical bases of each of the tests are at odds. A study which would compare the COII to Holland's hexagon model would provide valuable information to current research.

Because a test-retest design was utilized for this study, the smaller sample of students in the latter group may represent only the more able academic students - the less academic student may have left school, dropped the course, or did not attend the class. If this study were to be repeated it may be advisable to conduct the test-retests in a variety of courses, both core and non-core subjects.

CHAPTER II

REVIEW OF RELATED LITERATURE

There is some evidence to indicate that the career development process is becoming more complex as society increases in its complexity. Dricker (1969) noted that the level of opportunity available in our society has created an unprecedented level of personal responsibility for what one is and what one becomes. Toffler (1970) speculated on the increasing possibility of this problem when he wrote:

> Ironically, the people of the future may suffer not from an absence of choice but from a paralyzing surfeit of it. They may turn out to be victims of that peculiarly super-industrial dilemma: over choice. (p.26)

Society's increasing complexity and the difficulties encountered by young people today in making vocational decisions suggests the need of research to establish techniques for facilitating vocational development. These techniques, however, must have a theoretical base.

Keeping in mind the theory formulated by Ginzberg and others (1951), and drawing upon his previous research and the 20 year longitudinal study (The Career Pattern Study), Super (1953) formulated a theory of vocational development which contained ten propositions. These ten propositions are:

(1) People differ in their abilities, interests and personalities.

(2) They are qualified, by virtue of these characteristics, each for a number of occupations.

(3) Each of these occupations require a characteristic pattern of abilities, interests and personality traits, with tolerances wide enough, however, to allow both some variety of occupations for each individual and some variety of individuals in each occupations.

(4) Vocational preferences and competencies, the situations in which people live and work, and hence their self-concepts, change with time and experience (although self-concepts are generally fairly stable from late adolescence until late maturity), making choice and adjustment a continuous process.

(5) This process may be summed up in a series of life stages characterized as those of growth, exploration, establishment, maintenance, and decline, and these stages may in turn be subdivided into (a) the fantasy, tentative, and realistic phases of the exploratory stage, and (b) the trial and stable phases of the establishment stage.

(6) The nature of the career pattern (that is, the occupational level attained and the sequence, frequency, and duration of trial and stable jobs) is determined by the individual's parental socioeconomic level, mental ability, and personality characteristics, and by opportunities to which he is exposed.

(7) Development through the life stages can be guided, partly by facilitating the process of maturation of abilities and interests and partly by aiding in reality testing and in the development of the self-concept.

(8) The process of vocational development is essentially that of developing and implementing a self-concept, it is a compromise process in which the self-concept is a product of the

> interaction of inherited aptitudes, neutral and endocrine make-up, opportunity to play various roles, and evaluations of the extent to which the results of role playing meet with the approval of superiors and fellows.
>
> (9) The process of compromise between individual and social factors, between self concept and reality, is one of role playing, whether the role is played in fantasy in the counseling interview, or in real life activities such as school classes, clubs, part-time work, and entry jobs.
>
> (10) Work satisfactions and life satisfactions depend upon the extent to which the individual finds adequate outlets for his abilities, interests, personality traits, and values; they depend upon his establishment in a type of work, a work situation, and a way of life in which he can play the kind of role which his growth and exploratory experiences had led him to consider congenial and appropriate. (p.189)

These elements are evident in the later works of Super (1957, 1963a, 1963b, 1963c, 1972), of Crites (1965, 1969, 1973), and of Gribbons and Lohmes (1968).

Super (1955) stated that a natural aspect of vocational development was vocational maturity.

> Vocational maturity is used to denote the degree of development, the place reached on the continuum of vocational development from exploration to decline. Vocational maturity may be thought of as vocational age, conceptually similar to mental age in early adolescence. (p.153)

According to Super (1963c), the concept of vocational maturity allows the observer to determine the rate and degree

of maturation relating to career matters. It is therefore of great importance to understand vocational maturity in terms of the congruence between an individual's real vocational behavior and the expected vocational behavior at that age.

Elaborating further, Super (1963c) states that the maturation process occurs in five stages, which he calls vocational developmental tasks, which are: (1) crystallization (14 - 18 years of age), (2) Specification (18 - 21 years of age), (3) Implementation (22 - 24 years of age), (4) Stabilization (25 - 35 years of age), (5) Consolidation (35 years of age plus.)

Although crystallization (Super, 1963c) can occur at any age, it tends to occur, as stated above, during the 14 - 18 year age span which has implications for high school educators. Attutides and behaviors relevant to the development task of crystallization are:

a. awareness of the need to crystallize
b. use of resources
c. awareness of factors to consider
d. awareness of contingencies which may affect goals
e. differentiation of interests and values
f. formulation of a generalized preference
g. awareness of present-future relationships
h. consistency of preference
i. possession of information concerning the preferred occupation
j. planning for the preferred occupation
k. wisdom of the vocational preference (p.138)

This developmental process has led many to investigate the

relationship between self-concept and career choice. A study by Norrell and Grater (1960), which was later replicated by Brown and Pool (1966), found that individuals who can accurately predict their interests are more aware of themselves. Accuracy of prediction was measured by the Strong Vocational Interest Blank and Self-Awareness was defined in terms of Edward's Personal Preference Schedule.

Others (Englander, 1960); Kibrick and Tiedman, 1961; Blocher and Schutz, 1961) studied the relationship between self-perception and an individual's perceptions of persons in one's chosen occupation. All found that one's perceptions of one's own characteristics is congruent with one's perception of the characteristics of people in the chosen occupation. These findings all lend support to Super's theory of career development as an implementation of the self-concept.

In order for the individual to interpret what he knows about himself in terms of his understanding of occupations for which he might be best suited, the world of work must be described in ways that make this interpretation easy. One way of making individuals aware of occupations is via interest inventories. These interest inventories greatly help individuals understand their interests and relate them to the world of work.

Two interest inventories which are currently being used in Alberta schools are the Canadian Occupational Interest Inventory

(COII) and the Ohio Vocational Interest Survey (OVIS). The OVIS was developed to serve as a link between the individual seeking occupational information and the occupational information and classification system provided in the Dictionary of Occupational Titles (DOT). Using a cubistic model, D'Costa and Winefordner (1969) were able to condense the 21,741 separate jobs into the 24 interest scales of the OVIS. The OVIS was standardized on over 46,000 students in grades 8 - 12 from 41 school districts across the United States

Statistically, the OVIS is a rigorously controlled instrument. D'Costa and others (1970) report test-retest reliability coefficients for the 24 scales of between .72 and .90. The first criterion for scale independence was that no scale should correlate above .70 with more than three other scales. With the exception of Scale 3, Personal Services (which correlated above .70 with five other scales), and scales 7, Crafts and Precise Operation (which correlated over .70 with 4 other scales), the data indicates that the OVIS scales are relatively independent. Users should feel confident using this instrument on the basis of these statistics.

A number of studies have been done to assess both the comparability of the OVIS and other instruments, and the usefulness of the OVIS. Woodbury and Pate (1977) identified dimensions in terms of delinquents' vocational adjustment: delinquents'

interest in activities related to the personal expression of ideas and talents account for 41.7 per cent of the variance; delinquents' interest in activities such as engine repair, use of tools, and use of machines account for 5.7 per cent of the variance. Each of the other tests accounted for a separate area of variance.

Augustin (1975) conducted a study to relate the revised Occupation Analysis Inventory interest and need-requirement estimates for a sample of forty-three jobs to the interest scores of job incumbents, based on OVIS scores. The OAI is an instrument which contains descriptions of work activities and conditions on which jobs and occupations are rated. Correlations of over .60 on the criterion variables show that the OAI attitude-requirement estimates for jobs possess relevance to the interests of job incumbents.

In a study concerned with the validity of using test data as a predictor of student success in various vocational education programs, Drummond (1975) focused on a description of the student groups in terms of selected variables. Representing 12 programs of study from six vocational centers in Maine, 519 students gave information regarding their current program of study, expected job, vocational aspirations, grade point averages and scores on an ability test which was administered in conjunction with the study. This data was compared to standardized measures of

interests obtained by the OVIS. Results showed that the OVIS scores did differentiate among students in various vocational training programs. This study supported the conclusions made by D'Costa (1968) in an earlier study.

Shaffer (1976) used data from two scales of the OVIS to investigate the relationship between item-favorability and sex bias. He found that item-favorability was not a suitable criterion for the identification of existing sex bias.

In a study by Newman and others (1974), vocational interests among eight and ninth grade students were examined using the OVIS, and factor structures by grade, sex, and race were compared. The results showed that the OVIS can be used effectively to measure similar interests of both blacks and white students, and that the OVIS, since it is not a sex-restrictive instrument, can be used with both male and female students.

To date, there have been very few studies assessing the reliability and validity of the COII. The population used to standardize the COII consisted of several samples. The first two samples consisted of 199 Anglophones and 213 Francophones at Canada Manpower Centres through Canada. It was later administered to 193 students at the Limoilou CEGEP and to 284 subjects at the Ste-Foy CEGEP and Laval University in Quebec. The KR-20 correlations for these latter groups ranged from .757 to .907. The KR-20 correlations for the first two groups ranged from .733 to .895. In light of these results, the scales are considered homogeneous.

Begin and Lavallee (1975) carried out three reliability studies on the COII, using Francophone samples. The first study involving a test-retest interval of 11 days, showed Spearman rho correlations varying from .82 to .89. The latter two studies, involving a test retest interval of 15 days, had Spearman rho correlations varying from .82 to .92. The similarity of statistics for an item in both languages suggests that the reliability indexes are not affected by a language factor.

Begin and Lavalle (1977) conducted a study to investigate the convergent validity of the COII with the Kuder. The sample consisted of 66 secondary students in Quebec. The results showed that every COII scale showed a significant correlation with one or more of the Kuder scales.

A study by Fitzsimmons and Melnychuk (1979) dealt with the concurrent validity of the COII and the Self Directed Search. The subjects were 200 Alberta high school students enrolled in a variety of courses. Their findings indicated that both tests, the COII and the SDS, do significantly differentiate among the specified subject areas on the basis of their occupational interest patterns. Further to this, in five of the eight subject areas, the measured mean interest patterns on the COII and the SDS were almost identical to those described in volume 2 of the CCDO.

The fact that so few studies have been conducted with the COII, especially in terms of its reliability and validity, is a negative reflection upon the instrument. This type of information is certainly needed.

CHAPTER III

DESIGN OF THE STUDY

Sample

The sample used for the study consisted of 240 grade 11 students from M.E.LaZerte Composite High School in Edmonton. The school offers a full range of programs: general, business, vocational, academic matriculation, and combinations of the latter three programs. The socio-economic status of the students varies from the upper middle to the lower classes.

The school is operated on a partially semestered year. The only practical way to congregate groups of grade 11 students together for a large block of time such as is required for the COII and OVIS tests without causing a great deal of disruption was to test those students who were enrolled in Social Studies and English classes at the grade 11 level. In the second semester, there were 10 classes of Social Studies at the grade 11 level (this includes sociology, geography, psychology, western history, and social studies); during this semester there were six classes of English (20 and 23).

The sample was considered a random sample as students were placed in classes by computer largely on a chance basis.

Instrument

The instruments chosen for this study were the COII and the OVIS. The COII was administered to the students in their Social Studies classes. The OVIS was administered to the students in their English class. (The use of the OVIS in English classes, and the subsequent follow-up, is a regular part of the English program at M.E.LaZerte C.H.S.)

Procedure

During the first week of March, 1980, all students (N=153) registered in English 20 or English 23 were administered the OVIS. The administration of these tests occurred in the classroom where the students normally attended English classes.

During the second week of March, 1980, all students enrolled in a grade 11 Social Studies class or a related option were administered the COII. This test was administered by the Social Studies teacher who normally taught the class. The teacher had previously taken part in a one-hour workshop designed to insure correct and consistent administration of the test.

During the second week of June, 1980, the COII was again administered to students enrolled in grade 11 Social Studies or options thereof by their Social Studies teachers. No attempt was made to reach the forty-five students who did not write the test a second time.

Treatment of the Data

The means, standard deviations and alpha correlations were obtained for the COII for both occasions. Subtest scaled scores for each sample of the COII were correlated separately using both the product movement and Spearman rho correlations. The resulting five by five matrix includes things, business contact, routine, social and prestige scales.

A correlation was also obtained for the subtest scaled scores between the two COII tests. As well, separate correlations were obtained for the subtests for the male and female subjects. As before, five by five correlation matrixes using the product moment and Spearman rho were obtained (for the male and female subjects, only the product movement correlation were obtained.)

The subtest scales were also subjected to a pairwise T-test for all cases, for males, and for females. The contrast of subtest means was a method of determining where differences existed between corresponding scores.

Finally, the subtest and total standard scores for both the COII (test 1) and the OVIS were correlated for 138 subjects. The resulting five by twenty-four matrix included the following: COII (Things, Business Contact, Routine, Social, Prestige): OVIS (Manual Work, Machine Work, Personal Services, Caring for People/Animals, Clerical Work, Inspecting and testing, Crafts and Precise Operations, Customer Services, Nursing and related

technical services, Skilled Personal Services, Training, Literary, Numerical, Appraisal, Agriculture, Applied Technology, Promotion and Communication, Management and Supervision, Artistic, Sales Representative, Music, Entertainment and Performing Arts, Teaching/Counseling and Social Work, Medical). As before, correlations were obtained by using the Product moment and Spearman rho correlation. This matrix gives an indication of the convergence of the COII with the OVIS.

CHAPTER IV

ANALYSIS OF THE DATA

Analysis of the data were carried out as described in Chapter III. The first analysis of the data involved computation of the means, standard deviations, and Alpha correlations for each of the scales of the COII. This was done for the male subjects, female subjects, and for the total group. The above analysis was carried out for both administrations of the COII - the original and the retest. The results of this analysis is reported in Tables 1 and 2.

The next analysis of the data involved computation of Pearson product moment correlations between the scales of the COII with every other scale. The results for the original test are reported in Table 3. A similar analysis was carried out for the retest, and the results are reported in Table 5. As a matter of interest, rank order correlations using the Spearman rho correlations were also computed between scales for the COII. The results for the original test are reported in Table 4 and the results for the retest are reported in Table 6. Rank order correlations were computed solely for the benefit of those who wish to compare the results from this study with the results obtained by the authors of the test.

The seventh analysis of the data involved computation of Pearson product moment correlations between the scores of the original test and the retest. These results are shown in Table 7. As before, the computation of Spearman rho correlations was also calculated, again for the sake of comparison. These results are shown in Table 8.

Computation of Pearson product moment correlations between the scores of the original test and the retest for the male subjects are reported in Table 9. Table 10 reports the similar analysis of data but for the female subjects.

A pairwise T-test was then calculated to test for significant mean differences between the original test and the retest. The results are reported in Table 11. In addition to this, comparisons were made using pairwise T-tests between the female subjects and the male subjects. The results are shown in Tables 12 and 13 respectively.

Finally, analysis of the data was carried out involving the COII and the OVIS. This analysis of the data involved computations of the Pearson product moment correlations between the scales of the original COII and the subtests of the OVIS. These results are reported in Table 14. As before, a rank order correlation was also computed between the COII scales and OVIS subtests and these results are shown in Table 15.

The null hypothesis for each comparison between COII scales and the COII and OVIS are reported in this chapter. Following each table, the decisions as to whether to support or reject those hypothesis associated with it are reported. A level of significance of .05 was deemed necessary for the rejection of the null hypothesis.

Hypothesis Testing

Correlation coefficients between the subtest scores on the first COII test and the COII retest with a ninety day interval are reported in Table 7. Correlation coefficients between the subtest scores on the COII and the OVIS are reported in Table 14. Although the hypothesis stated below are concerned only with the subtests of the COII which correspond to one another on the original test and the retest, and with the subtests of the COII and the subtests of the OVIS, for the readers' interest, correlations between subtests within each test, as well as means and standard deviations, were reported. As well, as stated earlier, rank order correlations using the rho coefficients were also reported in order to aid others who engage in a similar study. All of the results were used to support or reject the null hypothesis which developed out of the aims of this study.

Intercorrelations

The means for each scale for the original COII test for the

male subjects, female subjects, and the total sample are indicated in Table 1. Analysis of this table indicates the following conclusions:

1. The means for male and female subjects are reversed on the following scales: Things-People; Routine-Abstract; Social-Solitary.

2. While the difference between means is much greater for males in the Business Contact-Scientific scale, the trend is similar for females.

3. The means for both male and female subjects are very similar in the Prestige-Production scale.

Results of the Alpha correlations for each scale for the original COII are also indicated in Table 1. Analysis of this data indicated the following:

1. Correlation coefficients for all scales are high, (Range .725 - .915).

2. The lowest correlation coefficients occur in the Routine-Creative scale ($r = .725$).

The means and alpha correlation coefficients for the retest COII are indicated in Table 2. As expected, the means for male and female subjects were very similar on this test compared to the means on the original test. This would appear to indicate that the scale means between the tests are very stable. In a

TABLE 1

Means, Standard Deviations, and Alphas for a group of subjects from an Alberta High School.

COII Test 1

	Males (N=106)			Females (N=97)			Total (N=240*)		
SCALE	$\bar{x}$		Alpha	$\bar{x}$		Alpha	$\bar{x}$		Alpha
Things	9.65	3.56	.849	4.32	3.72	.855	7.18	4.53	.901
People	4.35			9.68			6.82		
Business Contact	4.82	3.13	.749	6.98	4.12	.861	5.76	3.78	.828
Scientific	9.18			7.02			8.24		
Routine	7.74	2.75	.626	5.39	3.14	.744	6.58	3.18	.725
Abstract/ Creative	6.26			8.61			7.42		
Social	3.81	3.42	.824	10.01	3.99	.889	6.68	4.81	.915
Solitary	10.09			3.99			7.32		
Prestige	7.15	3.35	.781	7.76	3.39	.770	7.24	3.32	.762
Production	6.85			6.24			6.76		

* Since all subjects did not indicate their sex, the total N is greater than the sum of male and female subjects.

TABLE 2

Means, Standard Deviations, and Alphas for a group of subjects from an Alberta High School.

Retest COII

	Males (N=90)			Females (N=81)			Total (N=195*)		
SCALES	$\bar{x}$		Alpha	$\bar{x}$		Alpha	$\bar{x}$		Alpha
Things	9.82	3.27	.804	4.98	3.75	.839	7.13	4.44	.892
People	4.08			9.02			6.87		
Business Contact	4.47	3.17	.753	6.02	3.86	.837	6.00	3.78	.821
Scientific	9.53			7.98			8.00		
Routine	8.09	2.67	.600	5.24	2.99	.714	6.44	3.11	.701
Abstract/ Creative	5.91			8.76			7.56		
Social	3.64	2.95	.752	9.53	3.87	.860	6.96	4.40	.884
Solitary	10.36			4.47			7.04		
Prestige	6.34	2.92	.690	7.53	3.28	.746	7.14	3.10	.712
Production	7.66			6.47			6.86		

* Since all subjects did not indicate their sex, the total N is greater than the sum of male and female subjects.

like fashion, the alpha correlations in this test are similar to the alpha correlations of the original test.

These results seem to indicate that over a ninety-day interval, the COII subtests remain very consistent. It would also appear that the mean for three scales (Things-People; Routine-Abstract/Creative; Social-Solitary) is different for male and female subjects. The resulting profile of test scores for males and females would then be different, and this difference would have to be considered when analyzing test profiles for students. Some of the results are supported by previous research; some are appearing for the first time and need further research for verification prior to use in counseling and education.

It can be noted that in general for the total sample, the average results approach the theoretical mean of 7, with the exception of the Business Contact and Scientific scales.

It can be seen from the Alpha indexes in Tables 1 and 2 that the respective scales do in effect appear to measure the properties they are intended to measure. Given these results, even though the indexes for Routine vs Creative/Abstract and Prestige vs Production are lower than the others, the scales may be considered homogeneous.

Theoretically, the factorial model on which the COII is based implies an independence of scales. Table 3 reports the scale correlations on test one; Table 5 reports the scale correlations on the retest. There appears to be a high correlation between at least two of the scales. Tables 3 and 5 indicate that there is a relatively close correlation among the People, Social and Prestige scales, while the inverse is true for the opposing scales. This can be explained in part by the fact that these three scales are related to direct contact with people. Another close correlation appears between the Things and Routine scales. This relationship can be explained in part by the fact that both of these scales involve dealing with inanimate objects which are generally handled in a fixed manner. Tables 4 and 6, showing rho correlations and intended solely for comparison purposes, indicate very similar results.

A test-retest reliability study was then carried out on the COII involving 194 students. The results are given in Table 7. The same analysis was also carried out for the male students (N = 90) - Table 9 - and for the female students (N = 81) - Table 10.

It was hypothesized that the stability of the COII scales would be superior to .80 and most probably approach .85 for all the scales. In this respect, the test-retest correlations as shown in Table 7 confirm this hypothesis. The range is from .822 to .893. The fact that the subjects are high school students and are between the ages of 15 to 18, as time when the

TABLE 3

Inter scale correlations (Product moment) for a group of subjects from an Alberta High School.

COII

N = 240 DF = 238 R@ .0500 = .1267 R@ .0100 = .1660

VARIABLE					
THINGS	1.0000				
BUSCON	-.3746	1.0000			
ROUTINE	.5420	-.0958	1.0000		
SOCIAL	-.7671	.4040	-.4620	1.0000	
PRESTIGE	-.5396	.2319	-.2823	.4707	1.0000
	THINGS	BUSCON	ROUTINE	SOCIAL	PRESTIGE

TABLE 4

Inter scale correlations (Spearman Rho) for a group of subjects from an Alberta High School.

COII Test 1

N = 240 RHO@ .0500 = .1268 RH)@ .0100 = .1666

VARIABLE					
THINGS	1.0000				
BUSCON	-.3406	1.0000			
ROUTINE	.5467	-.0993	1.0000		
SOCIAL	-.7564	.3816	-.4779	1.0000	
PRESTIGE	-.5533	.2113	-.2796	.4771	1.0000
	THINGS	BUSCON	ROUTINE	SOCIAL	PRESTIGE

TABLE 5

Inter scale correlations (Product moment) for a group of subjects from an Alberta High School.

COII Retest

N = 195 DF = 193 R@ .0500 = .1406 R@ .0100 = .1841

VARIABLE					
THINGS	1.0000				
BUSCON	-.4189	1.0000			
ROUTINE	.5445	-.1491	1.0000		
SOCIAL	-.7402	.4243	-.4802	1.0000	
PRESTIGE	-.5787	.3779	-.2912	.4917	1.0000
	THINGS	BUSCON	ROUTINE	SOCIAL	PRESTIGE

TABLE 6

Inter scale correlations (Spearman rho) for a group of subjects from an Alberta High School.

COII Retest

N = 195 RHO@ .0500 = .1407 RHO@ .0100 = .1849

VARIABLE					
THINGS	1.0000				
BUSCON	-.4067	1.0000			
ROUTINE	.5441	-.1525	1.0000		
SOCIAL	-.7386	.4180	-.4890	1.0000	
PRESTIGE	-.5816	.3607	.2866	.4857	1.0000
	THINGS	BUSCON	ROUTINE	SOCIAL	PRESTIGE

TABLE 7

Test Retest correlation (Pearson product moment) for a group of Alberta High School students: 90 day interval.

COII

N = 194 DF = 192 R@ .0500 = .1409 R@ .0100 = .1845

	VARIABLE					
	THINGS	.8937	-.3796	.5068	-.7382	-.5125
	BUSCON	-.3904	.8559	-.1454	.3694	.2876
RETEST	ROUTINE	.5038	-.0658	.8238	-.4300	-.2931
	SOCIAL	-.7143	.3777	-.4332	.8783	.3988
	PRESTIGE	-.5729	.3179	-.2359	.4633	.8221
		THINGS	BUSCON	ROUTINE	SOCIAL	PRESTIGE

TEST 1

TABLE 8

Test Retest correlation (Spearman rho) for a group of Alberta High School students: 90 day interval.

COII

N = 194 RHO@ .0500 = .1411 RHO@ .0100 = .1854

	VARIABLE					
	THINGS	.8813	-.3592	.5121	-.7241	-.5109
	BUSCON	-.3745	.8456	-.1503	.3511	.2794
RETEST	ROUTINE	.5015	-.0612	.8326	-.4348	-.3045
	SOCIAL	-.7065	.3671	-.4493	.8614	.4045
	PRESTIGE	-.5733	.2980	-.2388	.4571	.8162
		THINGS	BUSCON	ROUTINE	SOCIAL	PRESTIGE

TEST 1

choice of a career has not yet crystallized for many, reinforces this hypothesis.

Table 9 indicates that the scale correlations are lower for males than for the full sample. Three of the scales - Business Contact, Routine and Social - have correlations below .80, while the other two scales, Things and Prestige, have correlations just over .80, namely .812 and .802 respectively. While these results indicate the stability of the test, they also show that males, at this age, tend to have less stable career interests.

Table 10 is the test-retest correlation matrix for the female students. Only two of the scales, Routine and Social show correlations below .80; however, these correlations, .792 and .788 respectively, are very close to .80. It thus appears that female high school students have more stable career interests than their male counterparts.

The results of the Pairwise T-tests for all cases, males and females are given in Tables 11, 12, and 13. The T-tests for differences between the means of the original test and the retest of the COII were computed to test the hypothesis that the mean scores of the two tests would not differ.

For the total sample, small, non-significant differences were observed between the means of four of the scales: Things, Routine, Social, and Prestige.

TABLE 9

COII Scales Subtest Retest Male subjects only (using Product moment R).

N = 90 DF = 88 R@ .0500 = .2072 R@ .0100 = .2702

	VARIABLE					
	THINGS	.8121	-.1723	.4318	-.5761	-.5483
	BUSCON	-.1799	.7738	-.0646	.2426	.2756
RETEST	ROUTINE	.5163	.0426	.7814	-.4063	-.2917
	SOCIAL	-.5506	.1951	-.4330	.7915	.4279
	PRESTIGE	-.5470	.3142	-.2546	.5046	.8022
		THINGS	BUSCON	ROUTINE	SOCIAL	PRESTIGE
				TEST		

TABLE 10

COII Scales Test Retest Female subjects only (Using Product moment R).

N = 81 DF = 79 R@ .0500 = .2185 R@ .0100 = .2847

	VARIABLE					
	THINGS	.8704	-.3120	.3109	-.6186	-.5458
	BUSCON	-.2698	.8727	.0147	.1275	.2180
RETEST	ROUTINE	.2425	.0548	.7928	-.2339	-.2143
	SOCIAL	-.5287	.1361	-.2774	.7886	.3427
	PRESTIGE	-.5880	.1948	-.1512	.4044	.8479
		THINGS	BUSCON	ROUTINE	SOCIAL	PRESTIGE
				TEST		

A significant difference at the .05 level was found between the means of the Business Contact scales of the original test and the retest ($p = .02$). With the exception of the Business Contact scale, the hypothesis of no significant difference between the means of the original test and the retest was supported.

Results for the female students only, Table 12, parallel those of the total sample. No significant differences were found between the means of all the scales.

Results for the male students only, Table 13, show the same results as for the female only sample; no significant difference between means was found. The hypothesis of no significant mean differences between scales was supported.

A secondary aspect of this research was to establish the convergent validity of the COII with the OVIS. Table 14 gives an indication of the convergence.

The COII Things scale correlates .54 with the OVIS 2 (Machine Work) and .55 with OVIS 7 (Crafts and Precise Operations). On the other hand, the COII People scale correlates .498 with OVIS 12 (Literary), .412 with OVIS 17 (Promotion and Communication) and .447 with OVIS 23 (Teaching, Counseling and Social Work). It therefore appears that the meaning of this COII scale is confirmed by its relationship to the scales from the OVIS.

The COII Business Contact scale correlates .436 with the

TABLE 11

COII Scales Test Retest Pairwise
T-tests, Total Sample.

VARIABLE	MEAN	MEAN DIFF	STD DEV	T-STAT	SIGNIF
THINGS1	7.2124	.82902 -1	2.0649	.55775	.5777
THINGS2	7.1295	N= 193			
BUSCON1	5.6062	-.33161	2.0600	-2.2363	.0265
BUSCON2	5.9378	N= 193			
ROUTINE1	6.5648	-.36269 -1	1.8912	.26642	.7902
ROUTINE2	6.5285	N= 193			
SOCIAL1	6.6632	-.93264 -1	2.2871	-.56651	.5717
SOCIAL2	6.7565	N= 193			
PRESTIG1	7.2383	.15026	1.9293	1.0820	.2806
PRESTIG2	7.0881	N= 193			

TABLE 12

COII Scales Test Retest Pairwise
T-tests, female subjects only.

VARIABLE	MEAN	MEAN DIFF	STD DEV	T-STAT	SIGNIF
THINGS1	4.4380	-.12346	1.9454	-.57115	.5695
THINGS2	4.4815	N= 81			
BUSCON1	6.8889	-.29630	2.0460	-1.3034	.1962
BUSCON2	7.1852	N= 81			
ROUTINE1	5.5062	.37037 -1	1.9650	.16964	.8657
ROUTINE2	5.4691	N= 81			
SOCIAL1	10.111	.20988	2.5086	.75298	.4537
SOCIAL2	9.9012	N= 81			
PRESTIG1	7.8272	-.12346 -1	1.8540	-.59930 -1	.9524
PRESTIG2	7.8395	N= 81			

TABLE 13

COII Scales Test Retest Pairwise
T-Test, male subjects only.

VARIABLE	MEAN	MEAN DIFF	STD DEV	T-STAT	SIGNIF
THINGS1	9.5444	.10000	2.1518	.44087	.6604
THINGS2	9.4444	N= 90			
BUSCON1	4.4444	-.41111	2.2280	-1.7505	.0835
BUSCON2	4.8556	N= 90			
ROUTINE1	7.6222	.13333	1.8795	.67300	.5027
ROUTINE2	7.4889	N= 90			
SOCIAL1	3.8444	-.38889	2.1342	-1.7286	.0873
SOCIAL2	4.2333	N= 90			
PRESTIG1	7.0000	.20000	1.9499	.97304	.3332
PRESTIG2	6.8000	N= 90			

TABLE 14

Inter Scale correlation of the COII and OVIS for a group of Alberta High School subjects (Using Product moment R)

N = 138 DF = 136 R@ .0500 = .1672 R@ .0100 = .2186 R@ .0100 = .2771

VARIABLE					
OVIS 1	.3943	-.1077	.2493	-.2683	-.2205
OVIS 2	.5477	-.3020	.3383	-.4502	-.2758
OVIS 3	-.0751	.3268	.0478	.1860	.1496
OVIS 4	-.3424	.2589	-.2705	.6243	.2201
OVIS 5	-.2271	.3290	.1526	.2477	.1198
OVIS 6	.2143	.0086	.2016	-.1942	-.0344
OVIS 7	.5582	-.2893	.2842	-.4901	-.2935
OVIS 8	-.2977	.4363	.0349	.2860	.2529
OVIS 9	-.3137	.0517	-.1953	.5371	.2321
OVIS 10	-.2443	.3465	-.1254	.3043	.1547
OVIS 11	-.1108	.1427	-.0858	.1300	.2115
OVIS 12	-.4982	.3572	-.5150	.4367	.3844
OVIS 13	.1609	-.2676	.2443	-.2033	-.0040
OVIS 14	.3454	-.3942	.1840	-.3655	-.0862
OVIS 15	.3128	-.2349	.0763	-.1785	-.1780
OVIS 16	.3932	-.3869	.1490	-.4306	-.1556
OVIS 17	-.4126	.3078	-.3288	.3497	.4215
OVIS 18	-.0423	.1065	.1267	-.0448	.2629
OVIS 19	-.3544	.3522	-.5057	.3365	.1892
OVIS 20	-.0041	.0501	.0911	-.1171	.1821
OVIS 21	-.3235	.2633	-.3417	.3071	.3432
OVIS 22	-.3977	.3662	-.4654	.3767	.4501
OVIS 23	-.4474	.2566	-.3591	.5106	.4115
OVIS 24	-.2187	-.1124	-.1837	.3225	.1734
	THINGS	BUSCON	ROUTINE	SOCIAL	PRESTIGE

TABLE 15

Inter Scale correlation of the COII and OVIS for a group of Alberta High School subjects (Using Spearman rho R)

N = 138 RHO@ .0500 = .1675 RHO@ .0100 = .2201 RHO@ .0010 = .2811

VARIABLE					
OVIS 1	.4195	-.1647	.2503	-.2844	-.2589
OVIS 2	.5626	-.3193	.3152	-.4531	-.2869
OVIS 3	-.0661	.2680	.0551	.1660	.1316
OVIS 4	-.3460	.2421	-.2584	.6323	.2217
OVIS 5	-.2042	.2534	.1238	.2285	.1095
OVIS 6	.2272	-.0309	.2040	-.1876	-.0481
OVIS 7	.5569	-.2823	.2510	-.4853	-.2823
OVIS 8	-.2971	.4175	.0446	.2799	.2450
OVIS 9	-.3055	.0806	-.1916	.5388	.2781
OVIS 10	-.2613	.3270	-.1348	.3143	.1296
OVIS 11	-.0811	.1060	-.0603	.1366	.2178
OVIS 12	-.4897	.3373	-.5092	.4416	.3710
OVIS 13	.1668	-.2746	.2237	-.1891	.0074
OVIS 14	.3647	-.4197	.1676	-.3848	-.1027
OVIS 15	.3292	-.2515	.0840	-.1925	-.1988
OVIS 16	.4143	-.4043	.1487	-.4441	-.1734
OVIS 17	-.4104	.2950	-.3204	.3485	.4287
OVIS 18	-.0176	.0919	.1298	-.0447	.2945
OVIS 19	-.3689	.3543	-.5115	.3522	.1968
OVIS 20	.0150	.0533	.0892	-.1168	.1776
OVIS 21	-.3296	.2212	-.3882	.3143	.3355
OVIS 22	-.4033	.3234	-.4284	.3750	.4264
OVIS 23	-.4465	.2392	-.3712	.5226	.4087
OVIS 24	-.2003	-.0877	-.1700	.3099	.1887
	THINGS	BUSCON	ROUTINE	SOCIAL	PRESTIGE

OVIS 8 (Customer Service) scale, and .366 with the OVIS 22 (Entertainment and Performing Arts) scale. The COII Scientific scale correlates .39 with OVIS 14 (Appraisal) and .386 with OVIS 16 (Applied Technology). This pair of COII scales appears to be paralleled by the OVIS scales which help to define them.

The COII Routine scale appears to be the least related to the OVIS scales. Routine correlates .338 with OVIS 2 (Machine Work) and .284 with OVIS 7. Both of these coefficients are significant at the .001 level. The Abstract/Creative scale, however, correlates .51 with OVIS 12 (Literary), .32 with OVIS 17 (Promotion and Communication) .50 with OVIS 19 (Artistic), .42 with OVIS 21 (Music), and .45 with OVIS 22 (Entertainment and Performing Arts). These coefficients confirm, at least directionally, the opposition between Routine and Abstract/Creative.

As expected, the COII Social scales correlates .62 with OVIS 4 (Caring for People), .53 with OVIS 9 (Nursing and Related Services), and .51 with OVIS 23 (Teaching, Counseling and Social Work). Conversely, COII Solitary correlates .45 with OVIS 2 (Machine Work), .49 with OVIS 7 (Crafts and Precise Operations), and .43 with OVIS 16 (Applied Technology). Again, this pair of COII scales appear to be paralleled by the OVIS scales which help to define them.

The Prestige and Production scales of the COII show

significant correlations at the .001 level with several OVIS scales. Prestige correlates .38 with OVIS 12 (Literary), .42 with OVIS 17 (Promotion and Communication), .45 with OVIS 22 (Entertainment and Performing Arts), and .41 with OVIS 23 (Teaching, Counseling and Social Work). Production correlates significantly at the .001 level with only one OVIS scale, OVIS 7 (Crafts and Precise Operations). The correlation is .29. While these correlations are in the right directions, it should be realized that there is no immediate and direct counterpart among the OVIS scales that would specify their significance.

Every COII scale showed a significant correlation with one or more of the OVIS scales. This significant relationship to different OVIS scales would suggest that the COII scales do indeed pertain to the domain of interests.

Summary of Results

Conclusions were drawn regarding the null hypothesis and results were obtained by computing (a) the means and alpha correlations within each testing period, (b) inter-scale correlations for each testing period, (c) between test periods scale correlations, (d) Pairwise T-tests to determine whether differences between the means of each scale of the Test 1 and the retest existed, and (e) correlations between the COII scales and OVIS scales. The results may be summarized as follows:

1. The correlations indicate that each scale of the COII is internally consistent.

2. There is a significant difference in the means for the Things, Business Contact, Routine, and Social scales between the male and female subjects.

3. There is a significant relationship between the People, Social, and Prestige scales.

4. There is a significant relationship between the Things, Solitary and Production scales.

5. There is a significant relationship between the Things and Routine scales.

6. There is a significant relationship between the COII scales. The scales remain stable over a 90 day period.

7. There is a significant difference between the means of the Business Contact scale over a 90 day period.

8. There is a significant correlation between each COII scale and one or more OVIS scales.

CHAPTER V

CONCLUSIONS AND IMPLICATIONS

The purpose of this study was to ascertain the stability of the COII over a period of time. Thus, the study attempted to assess the reliability of the COII over several dimensions: test-retest correlations over a 90 day interval; inter-item alpha correlations; scale means; scale correlations; and scale mean differences. As well, the COII scales were compared to the OVIS scales in order to establish convergent validity. In order to make these assessments, two hundred Alberta high school students were administered the COII twice and the OVIS once, and the following conclusions were reached by an analysis of their scores.

Conclusions

It seems evident, from the results of the alpha correlations for both administrations of the COII, that the scales are very stable. The internal consistency indexes calculated for each scale suggest a relatively high level of reliability for the instrument.

The means for male and female subjects are reversed on the following scales: Things-People; Routine-Abstract/Creative; Social-Solitary. Female subjects tended to have a high mean on

the People, Abstract/Creative, and Social scales while the males scored high on the opposite scales. The interests which were rated high by the female subjects correspond to those interests which might be expected of people seeking a career in areas such as social work, teaching, sales, or nursing. The interests of the males are more often related to pure sciences and to the things and data aspect of occupations.

In four of the scales, the average results approach the theoretical mean of 7.0; the exception is the Business Contact-Scientific scale. This would appear to suggest that modifications to this scale would be in order, so the mean would approach 7.0.

The alpha indexes indicate that the respective scales do in effect appear to measure the interests they purport to measure. Therefore, the scales may be considered homogeneous.

While the factorial model on which the COII is based implies an independence of scales, this is not the case. There is a high correlation between at least two of the scales. The People, Social, and Prestige scales seem to be closely related. This may be due to the fact that all three scales are based on direct involvement with people.

A close relationship can also be seen between the Things and Routine scales. This relationship may be due to the fact that both of these scales involve dealing with inanimate objects, generally in a fixed manner.

The COII appears to be a very stable instrument. Over a ninety day interval, the results of a test-retest study confirm this hypothesis; the correlations range from .822 to .892. Add to this the fact that the subjects were all high school students, many of whom have not yet made a career choice, and the hypothesis becomes strongly supported.

The test-retest concept also indicated that male high school students tended to have less stable career interests than did female high school students. This may be due to the fact that at this age, females are more mature than males. It may also indicate that females tend to seek more conventional careers, while males are more adventurous in their career choice.

The stability of the test was also demonstrated by comparing the difference between the mean scores of the two tests. With one exception, the Business Contact-Scientific scale, there was no significant difference between the means of the test-retest. As stated earlier, the Business Contact-Scientific scale appears to require some modification in order that it be on par with the other scales.

It seems evident, from the results of correlations between the COII and the OVIS, that the instruments are highly related. Correlations between corresponding subtests of the OVIS and the COII scales are generally high and significant beyond the .01

level. Since every COII scale showed a significant relationship with one or more of the OVIS scales, it could be considered that the COII scales do represent measures which are in the domain of interests.

In terms of this study, the conclusions above seem to answer the questions put forth in Chapter 1. The COII is a reliable test for high school students. It could also be used in place of the OVIS in a career exploration unit. In fact, the bipolar model used in the COII does have the advantage of directly applying the scale scores to the CCDO, thereby reducing the decision-making process which takes place in a career development program.

Implications for Further Research

In terms of further research, the following implications exist:

1. Studies to determine the reliability of the COII for varying periods of time are necessary.

2. The practicality of using the instrument at the junior high level should be investigated.

3. Samples of students, drawn randomly from each province, should be administered the COII in order to determine if the findings from this study are general.

4. An item analysis of male-female subject responses should be carried out to determine whether the COII has a sex bias.

5. Studies comparing this inventory with other interest inventories, using high school students as the sample population, are necessary to determine the convergent validity of the COII.

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APPENDICES

APPENDIX A

Canadian Occupational Interest Inventory

Instructions

In the booklet that has been distributed to you, you will find activities that may interest you. Under each of the letters A and B, there is a group of three activities. The activities in group A are opposed to the activities in group B.

You must indicate on the answer sheet your preference for activities from group A or from group B. There are two examples that demonstrate the procedure.

Example 1

A	B
Learn to read	Learn music
Learn to write	Learn to dance
Learn morse code	Learn to sing

The person who answered this question preferred group A activities. Therefore, he put an X in box A, as follows (see also your answer sheet):

		A	B
Examples:	1	☒	☐

Example 2

A	B
Do ironwork	Write a letter
Do copperwork	Recite a poem
Do woodwork	Write a song

Here the subject preferred group B activities. Therefore, he put an X in box B, as follows:

		A	B
Examples:	2	☐	☒

Note that you indicate your answers from left to right. (Do the same to the end.) If you are not satisfied with an answer, circle the one you want to change and indicate your new choice.

There are no wrong answers. Your answers are the only correct ones. Therefore, it is important that you select the answer that best describes your preference in each question. Indeed, you should answer all questions, even if you may in some instances have the impression that there are some that do not apply to you. If this should occure, try to imagine which you would choose if you were able to perform every given activity. You should assume that you have all the training required to carry out all activities which appear in this booklet.

If you have any questions, the administrator will be pleased to assist you.

Now, you may begin.

- 1 -

A	B
Work with wrenches, hammers...	Write a report for an association
Handle test tubes in laboratories	Write articles for newspapers
Work with sheet metal, bricks, wood	Make summaries of articles for a review

---

- 2 -

A	B
Contact people by telephone to sell them merchandise	Locate river pollution sources
Canvass people to sell them newspaper or magazine subscriptions	Analyse products for quality control
Sell newspaper advertisements	Repair wrist watches

- 3 -

A	B
Organize an efficient filing system	Receive and send telegrams
Plan the work of office personnel to obtain maximum efficiency	Open and sort mail
Produce computer programs	Put punch cards into a computer

- 4 -

A	B
Work in a day care centre	Operate a photocopy machine
Work as a counsellor in a summer camp	Work as a laboratory technician
Teach disadvantaged people	Adjust the ignition system of a car

---

- 5 -

A	B
Produce a play	Write speeches for the boss
Do an acrobatic act	Write news reports for radio
Be regularly invited to appear on a television program	Write advertising material

---

- 6 -

A	B
Maintain and clean machinery	Teach history
Make hats, doll clothes...	Work in a tourist information office
Deliver goods to homes	Explain and interpret administrative regulations to the staff

---

- 7 -

A	B
Be a buyer for a department store	Excavate for discovery of ancient ruins
Buy articles at an auction, for resale	Study soil samples under a microscope
Run a stand at a regional exhibition	Observe the effect of various chemical fertilizers on plant growth

---

- 8 -

A	B
Do manicures	Create new hair styles
Upholster furniture	Do interior decorating
Cut out material from a pattern	Do fashion design

- 9 -

A	B
Work as a pipefitter doing installation and repairs	Work in a clinic for the handicapped
Become a machine operator	Listen to people's problems
Make pastry	Look after sick people

- 10 -

A	B
Temporarily replace the boss	Make stage sets
Be a radio announcer	Take measurements, cut and assemble garments
Be responsible for publicity at an important scientific exhibition	Frame paintings

---

- 11 -

A	B
Tell people stories	Assemble steel structures (building)
Explain lessons to children	Can fruits or vegetables
Receive door to door salesmen and discuss the merits of their products with them	Frame a wall

---

- 12 -

A	B
Meet people to promote product sales	Crossbreed animals to produce species
Sell insurance policies	Prepare a culture of infectious viruses
Sell products from door to door	Study kidney functions

- 9 -

A	B
Work as a pipefitter doing installation and repairs	Work in a clinic for the handicapped
Become a machine operator	Listen to people's problems
Make pastry	Look after sick people

- 10 -

A	B
Temporarily replace the boss	Make stage sets
Be a radio announcer	Take measurements, cut and assemble garments
Be responsible for publicity at an important scientific exhibition	Frame paintings

- 11 -

A	B
Tell people stories	Assemble steel structures (building)
Explain lessons to children	Can fruits or vegetables
Receive door to door salesmen and discuss the merits of their products with them	Frame a wall

- 12 -

A	B
Meet people to promote product sales	Crossbreed animals to produce species
Sell insurance policies	Prepare a culture of infectious viruses
Sell products from door to door	Study kidney functions

- 13 -

A	B
Look for ideas for a publicity campaign	Work as a clerk-typist
Write poetry	Work as a telephone operator in an office
Draw portraits (Sketch portraits)	File documents in numerical order

---

- 14 -

A	B
Work as an electronics technician	Counsel people on their personal problems
Control quality during the manufacture of films	Act as a community worker in a city district
Tune pianos	Work for an organization that helps disaster victims

---

- 15 -

A	B
Help organize a convention	Be the official delegate of a group at a convention
Write up the minutes of a meeting of the local Chamber of Commerce	Become President of the local Chamber of Commerce
Build sailboats	Be captain of a sailing crew

- 16 -

A	B
Assemble objects using glue	Illustrate a magazine
Finish the basement in your home	Do a radio report
Build stage sets	Do translations

- 17 -

A	B
Demonstrate a new product in a large store	Perform experiments on the resistance of certain metals
Persuade people to buy something	Calculate the exact quantity of gas needed for a plane to reach a specific point in Europe
Work as a salesperson	Design an intelligence test

- 18 -

A	B
Supervise the efficient functioning of an automatic machine	Devise lighting effects for a new play
Check texts for spelling and punctuation	Plan a fireworks event
Check bank statements with a calculating machine	Do theatre or television make-up

- 19 -

A	B
Work for an organization dealing with juvenile delinquency	Be a lighthouse keeper
Become a social worker	Work as an archivist
Help former inmates find employment	Be a television cameraman

- 20 -

A	B
Be recognized in an artistic field	Do hand weaving
Be the director of an antique furniture exhibition	Restore antique furniture
Be the artistic director of a summer theatre	Administer a summer theatre

- 21 -

A	B
Be an office receptionist	Bind books
Receive customers' complaints	Replace automobile brakes
Reply in writing to requests for information	Check electrical circuits for proper functioning

---

- 22 -

A	B
Transpose results onto graphs	Guide travellers
Advise farmers on animal care	Sell art objects
Analyse written documents in order to check their authenticity	Be a rental agent

---

- 23 -

A	B
Make floral arrangements	Code research results
Design new furniture	Replenish displays in a store
Create advertising posters	Assemble frames for eye glasses

- 24 -

A	B
Repair air conditioning systems	As a policemen, teach children safety rules
Pilot a small plane	Be a babysitter
Do telephone installations	Help people draw up a career plan

- 25 -

A	B
Be a shift foreperson	Work on house construction
Be a fire chief	Cut out wood panels
Be a police chief	Manufacture cement blocks

- 26 -

A	B
Learn welding	Take a communications course
Learn to read plans and specifications	Take language courses
Learn to braid rugs	Take music lessons

- 27 -

A	B
Take a course in public relations	Study the behaviour of living cells under a microscope
Take a course in sales techniques	Take a course in research methods
Study business administration	Study transmission of radio waves

---

- 28 -

A	B
Learn typing	Learn to draw
Learn card punching (IBM)	Take pottery courses
Learn how to transmit coded telegraph messages	Study abstract art

---

- 29 -

A	B
Take courses to become life guard	Study the functioning of bookkeeping machines
Study social sciences	Take a course in cooking
Take courses in human relations	Take a machinists course

- 30 -

A	B
Learn glass blowing	Take courses in physical education
Study wood sculpture	Take dramatic art courses (to become an actor)
Learn how to cut stone	Study ballet

- 31 -

A	B
Take courses in audio-visual techniques	Learn carpentry, cabinet making
Learn to draft reports	Learn masonry
Take journalism courses	Learn to restore old books

- 32 -

A	B
Study legislation governing sales	Learn to analyse research results
Study the habits of consumers	Study modern mathematics
Study sales promotion	Learn computer programming

- 33 -

A	B
Take musical composition courses	Learn bookkeeping
Study body expression	Learn methods of classifying library books
Study philosophy	Take a course in office management

- 34 -

A	B
Take first aid courses	Learn how to run a movie projector
Read reviews dealing with difficulties encountered by certain people in their lives	Learn how to repair domestic appliances
Study to become a community worker	Learn the jewellery trade

- 35 -

A	B
Work as an assistant to a well-known short film producer	Take horticulture courses (how to grow garden plants)
Study to become a stage manager at the theatre	Learn to develop pictures
Study to become an orchestra conductor	Take mechanics courses, for pleasure

---

- 36 -

A	B
Take English composition lessons	Learn how to work iron
Take rapid reading courses	Learn how to process rubber
Learn to express yourself	Learn how to make window panes

- 37 -

A	B
Learn to analyse textiles	Learn how to plan a budget
Learn how to recognize cloud types (weather)	Learn to assess the value of land and houses
Learn how to use laboratory instruments	Study business management

---

- 38 -

A	B
Study industrial design	Learn how to operate various office calculators
Take foreign literature courses	Learn how to grade soil samples
Study English composition rules	Study to become a court stenographer

---

- 39 -

A	B
Learn how to listen to people	Learn how to make ornamental ironwork
Learn how to move sick people	Learn how to mould plaster
Learn muscle rehabilitation	Learn how to use a sewing machine

---

- 40 -

A	B
Learn how to cut glass	Taking riding lessons
Learn how to work clay	Learn pole vaulting
Learn machine knitting	Learn free-skating techniques

- 41 -

A	B
Dismantle and overhaul the motor of a washing machine	Visit the editorial offices of a newspaper
Gather pieces of cloth in order to make a bedspread	Write a letter to a newspaper editor
Sand and repaint an old chair	Listen news/commentators exchange point of views

---

- 42 -

A	B
Attend a special meeting to discuss the merits of a new product	Attend a conference on the effects of pollution on the human body
Be invited to a store opening cocktail party	Present a research report on medicines to medical specialists
Represent a group at a convention	Listen to a scientific television broadcast

---

- 43 -

A	B
Read books on current events	Calculate your monthly budget
Read the latest art reviews	Go grocery shopping
Organize youth entertainment activities in your district	Repair children's toys

---

- 44 -

A	B
Repair a defective water pipe in your home	Read lessons to a temporarily blind friend
Check your work tools to see if they are in good condition	Make a personal contribution in student aid service
Dye clothes	Help a younger person do his homework

- 45 -

A	B
Make a stand for a record-player	Act as a judge in a beauty contest
Repair a defective stereo	Chair a meeting of a private club
Do leather work	Oversee a work group

- 46 -

A	B
Choose a gift for a friend's birthday	Consult a mechanical review
Write a travel report	Knit
Read the book review in weekend supplements	Trim a hedge

- 47 -

A	B
Visit trade fairs	Visit a scientific exhibition
Sell tickets for a social event	Try out various types of sails on a boat to see which of them works the best
Assess merchandise	Assemble electronic parts

- 48 -

A	B
Repaint the outside of the house	Make up puzzles
Weed a garden	Build an original rockery in your garden
Wash window panes	Invent mechanical gadgets

- 49 -

A	B
Do shopping for a sick person	Mould jewels
Administer first aid to accident victims	Install a television antenna
Entertain a sick relative	Repair your bicycle

- 50 -

A	B
Act as master of ceremonies at an important social event	Be an active member of a fishing or a sewing club
Offer to have the annual meeting of your club at your home	Paper a room which needs re-decorating
Voluntarily chair a citizen's committee	Prepare and provide the necessary documentation for discussing the budget of a social club

---

- 51 -

A	B
Write to someone in another country in order to learn his language	Repair a door which does not close properly
Attend a meeting of your local ratepayers' (tenants') association	Construct a wooden fence around your property
Listen to a political speech	Make lamp shades

- 52 -

A	B
Attend a commercial fair	Attend a scientific conference
Meet with dissatisfied customers	Check the condition of radio tubes
Write a sales report	Review literature on special scientific topics

---

- 53 -

A	B
Prepare a course	Assemble objects by following instructions
Read reviews of plays	Sharpen your tools
Listen to avant-garde (mode) music broadcasts on television	Replace defective electrical plugs

---

- 54 -

A	B
Visit families in need of assistance	Correct examination papers
Assist a person in his search for employment	Set up a pantry in your basement
Help people with alcohol problems	Chop wood for your fireplace

---

- 55 -

A	B
Be your neighbourhood alderman	Redecorate a room in your house
Speak in public	Repair the roof of your house
Be chairperson of the parents' association of your children's school	Weatherstrip the doors and windows of your house

---

- 56 -

A	B
Repair your car with used parts	Read articles on civil or criminal cases in newspapers
Build a barbecue in your yard	Read novels
Visit a factory to see the manufacture of certain objects with which you are familiar	Express an opinion in public

---

- 57 -

A	B
Be a member of the Board of the local Chamber of Commerce	Observe the behaviour of ants
Organize social activities	Make a topographical survey of a forest which you know well
Recruit members for a club	Watch stars through a telescope

- 58 -

A	B
Assemble fishing rods	Invent kitchen recipes
Do daily exercises to keep in shape	Draw cartoons
Go to car races	Organize rallies

- 59 -

A	B
Be a member of a ski rescue squad	Participate in automobile races
Contribute voluntary assistance in a hospital	Tinker with motors and mechanics in general
Teach voluntarily in your sparetime	Make tents out of canvasses

- 60 -

A	B
Do painting	Join private social clubs
Do pottery	Be president of a well-known social club
Construct a natural stone patio	Be responsible for your neighbourhood sports committee

- 61 -

A	B
Do amateur radio work	Start a stamp collection
Visit art galleries	Practise a form of target shooting (archery, guns...)
Join a film club	Fly kites

- 62 -

A	B
Read science fiction reviews	Offer your services to a charitable organization in order to make yourself known
Read texts on rocket engines	Trade stamps during your leisure time
Build miniature rockets	Meet people in the hope that they will become customers

---

- 63 -

A	B
Take photographs for a contest	Watch several television programs, regularly
Make up novels, compose songs...	Go for a drive in a car
Play chess	Go bowling

- 64 -

A	B
Develop your own pictures	Organize a family celebration
Watch birds	Collect clothing, toys, etc. for poor families
Do puzzles and play solitaire	Participate in a community project to create a day nursery in a disadvantaged neighbourhood

---

- 65 -

A	B
Assemble model cars	Join a golf club
Build a boat with friends	Be honorary president of a canvassing campaign
Do gardening	Be responsible for a group on an organized trip

- 66 -

A	B
Build a work bench in your basement	Join a cultural exchange club
Set up a weaving loom	Attend a conference
Construct a potter's wheel	Participate in the Parent-Teacher's Association

---

- 67 -

A	B
Read scientific journals	Read the financial page of a new
Record the songs of various bird species	Meet friends and discuss business
Search for fossils (animal forms preserved in rocks)	Meet businessmen in order to collect charity funds

---

- 68 -

A	B
Play bridge	Remove snow from your front walk
Draw someone's picture	Go walking
Make new toys	Clean up your garage

- 69 -

A	B
Do crossword puzzles	Participate in a group which entertains senior citizens
Repair your domestic appliances	Hold meetings of a scout - guide pack
Make your own fishing lures - your own clothes	Help young people produce a play

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- 70 -

A	B
Practise a sport	Build your own summer house
Be chosen to represent your area at a sporting event	Build a small trailer
Rehearse a song for a contest	Build a canoe

APPENDIX B

Answer Sheet for Canadian Occupational Interest Inventory

ANSWER SHEET
for the
CANADIAN OCCUPATIONAL INTEREST INVENTORY

Name _____ Social Insurance Number _____ Age ____ Lang. E F ☐ ☐ Educ. ____ Sex M F ☐ ☐

Date _____ Location _____

Please answer the following question.

In order of preference, list below types of work you particularly liked:

1-_____ 2-_____

3-_____ 4-_____

Note 1- The question numbers go from left to right.
2- There are no wrong answers. Your answer is the only correct one.

	A	B		A	B		A	B		A	B		A	B
1	☐	☐	2	☐	☐	3	☐	☐	4	☐	☐	5	☐	☐
6	☐	☐	7	☐	☐	8	☐	☐	9	☐	☐	10	☐	☐
11	☐	☐	12	☐	☐	13	☐	☐	14	☐	☐	15	☐	☐
16	☐	☐	17	☐	☐	18	☐	☐	19	☐	☐	20	☐	☐
21	☐	☐	22	☐	☐	23	☐	☐	24	☐	☐	25	☐	☐
26	☐	☐	27	☐	☐	28	☐	☐	29	☐	☐	30	☐	☐
31	☐	☐	32	☐	☐	33	☐	☐	34	☐	☐	35	☐	☐
36	☐	☐	37	☐	☐	38	☐	☐	39	☐	☐	40	☐	☐
41	☐	☐	42	☐	☐	43	☐	☐	44	☐	☐	45	☐	☐
46	☐	☐	47	☐	☐	48	☐	☐	49	☐	☐	50	☐	☐
51	☐	☐	52	☐	☐	53	☐	☐	54	☐	☐	55	☐	☐
56	☐	☐	57	☐	☐	58	☐	☐	59	☐	☐	60	☐	☐
61	☐	☐	62	☐	☐	63	☐	☐	64	☐	☐	65	☐	☐
66	☐	☐	67	☐	☐	68	☐	☐	69	☐	☐	70	☐	☐

APPENDIX C

Profile Sheet for Canadian Occupational Interest Inventory

Name _____

PROFILE SHEET
for the
CANADIAN OCCUPATIONAL INTEREST INVENTORY

OMIT.	A	B	C	D	E	OMIT.
Scores	1 2 3 4 5 6 7 8 9 0					Scores

	Things	People	Bus. Contact	Scientific	Routine	Abst./Creat.	Social	Solitary	Prestige	Production	
	14	14	14	14	14	14	14	14	14	14	Jobs Suggested:
	13	13	13	13	13	13	13	13	13	13	CCDO Code No.
	12	12	12	12	12	12	12	12	12	12	1 _____
	11	11	11	11	11	11	11	11	11	11	2 _____
	10	10	10	10	10	10	10	10	10	10	3 _____
Measured Profile	9	9	9	9	9	9	9	9	9	9	4 _____
Men	8	8	8	8	8	8	8	8	8	8	5 _____
Women	7	7	7	7	7	7	7	7	7	7	6 _____
	6	6	6	6	6	6	6	6	6	6	7 _____
	5	5	5	5	5	5	5	5	5	5	8 _____
	4	4	4	4	4	4	4	4	4	4	9 _____
Revised Profile	3	3	3	3	3	3	3	3	3	3	10 _____
	2	2	2	2	2	2	2	2	2	2	
	1	1	1	1	1	1	1	1	1	1	
	0	0	0	0	0	0	0	0	0	0	

Directions

1. When the inventory has been scored (see: *Scoring Key*) and the scores entered into the appropriate boxes, the profile is plotted by blackening the numbers corresponding to the scales, and by drawing a line between the points.
2. The numbers of the scales to be retained (above the appropriate line) are entered into the space Measured Profile, starting with the highest scale.
3. The scales to be retained are interpreted to the client. (See: *Scale Definition Sheet*.)
4. The client is asked if the scales interpreted to him, in the order they have been interpreted, correspond to his interests:
   - If Yes, the Measured Profile becomes the Revised Profile.
   - If No, the client is asked to reorganize the profile according to his interests. This new profile is written as the Revised Profile.
5. When the Revised Profile has been obtained from the client, the search in the CCDO for occupations can be undertaken through the Glossary of Interest Profiles. (See: *Glossary of Interest Profiles*, p.iv, Method of Utilization.)

APPENDIX D

Scale Definition Sheet

for the

Canadian Occupational Interest Inventory

Scale Definition Sheet

for the

CANADIAN OCCUPATIONAL INTEREST INVENTORY

1. Things	Interest for activities which are carried out on objects, as opposed to:
6. People	Interests for activities which involve contact or communication with persons.
2. Business Contact	Interests for activities involving people to convince them either to buy something (salesperson), or to influence people in favor of the employer organization (public relations), as opposed to:
7. Scientific	Interests for activities involving research (science) or the application (technical) of mathematical, phychological or sociological principals.
3. Routine	Interests for activities of a routine, repetitive, concrete and well organized nature, as opposed to:
8. Abstract/Creative	Interests for activities where creativity and planning are particularly involved.
4. Social	Interests for activities involving people in order to help them, in a social welfare sense, as opposed to:
9. Solitary	Interests for activities which can be carried out without active participation of others and involving objects perceived as active processes, such as engines, mechanisms, etc...
5. Prestige	Interests for activities which either allow one to gain esteem from others or involves the exercising of a leadership, as opposed to:

0. Production — Interests for activities for which the outcome of the activity is a tangible end product.

APPENDIX E

Subtest Definition Sheet

for the

Ohio Vocational Interest Survey

Subtest Definition Sheet

for the

OHIO VOCATIONAL INTEREST SURVEY

1. Manual Work - Unskilled use of tools and routine work done by hand. Includes construction worker, farm hand, firefighter, dishwasher, janitor, and furniture mover.

2. Machine Work - Operating and adjusting machines used in processing or manufacturing. Also includes driving tractor-trailer trucks and operating heavy equipment.

3. Personal Services - Providing routine services for people as a waiter, waitress, household worker, doorman, messenger, gas station attendant, train conductor, fashion model, steward or stewardess.

4. Caring for People or Animals - Routine work related to the day-to-day needs of people or animals. Includes working in a nursing home, nursery, hospital, pet store, zoo, or animal laboratory.

5. Clerical Work - Typing, recording, filing, and other clerical or stenographic work.

6. Inspecting and Testing - Sorting, measuring, or checking products and materials; inspecting equipment or public facilities.

7. Crafts and Precise Operations - Skilled use of tools or other equipment as in the building trades, machine installation and repair, or the operation of trains, planes, and ships. Includes carpenter, welder, tool and die maker, watch repairman, television technician, mechanic, and applicance repairman.

8. Customer Services - Waiting on customers in stores, banks, motels, offices or at home; helping telephone customers with business orders, reservations, and other information. Also include tour guides, bus drivers, and ticket and toll collectors.

9. Nursing and Related Technical Services - Providing services as a nurse, physical therapist, X-ray or medical laboratory technician, or dental hygienist.

10. Skilled Personal Services - Providing skilled services to people such as tailoring, cooking, barbering, or hairdressing.

11. Training - Instructing people in employment or leisure-time activities such as games, crafts, flying, driving, and machine operation. Also includes training dogs, horses, and other animals.

12. Literary - Writing novels, poetry, reviews, speeches, or technical reports; editing; translating.

13. Numerical - Using mathematics as in accounting, finance, data processing, or statistics.

14. Appraisal - Determining the efficiency of industrial plants and businesses, evaluating real estate, surveying land, and chemical or other laboratory testing.

15. Agriculture - Farming, forestry, landscaping, and plant or animal research.

16. Applied Technology - Applying engineering principals and scientific knowledge. Includes physics, chemistry, geology, architecture, and mechanical or other types of engineering.

17. Promotion and Communication - Advertising, publicity, radio announcing, journalism, news information service, interviewing, recruiting; also providing legal services as a judge or lawyer.

18. Management and Supervision - Administrative or supervisory work, such as shop foreman, supervisor, school administrator, police or fire chief, head librarian, executive, hotel manager, and union official. Includes owning or managing a store or business.

19. Artistic - Interior decoration, display work, photography, commercial and creative art work, and artistic restoration.

20. Sales Representative - Demonstrating and providing technical explanations of products or services to customers, selling products or services and providing related technical assistance. Includes department store buyer, factory sales representative, wholesaler, and insurance or real estate salesman.

21. Music - Composing, arranging, conducting, singing, or playing instruments.

22. Entertainment and Performing Arts - Entertaining others by participating in dramatics, dancing, comedy routines, or acrobatics.

23. Teaching, Counseling, and Social Work - Providing instruction or other services in a school, college, church, clinic, or welfare agency. Includes instruction in art, music, ballet, or athletics.

24. Medical - Providing dental, medical, surgical, or related services for the treatment of people or animals.